

Table 7a

Above Caribou Dam		Ave DO	BOD	Chl-a	Periphyton	PO4-P
		ppm	ppm	ppb	mg chl-a / ft ²	ppb
Aug 28-30 Model Run		10.53	4.28	10.54	0	5.3
SA1	SOD	+ 50% - 50%	$\pm .3$			
SA2	BOD Decay	+ 50% - 50%	- .19 + .28	- .76 + .97		
SA3	Benthic CBOD	+ 50% - 50%	$\pm .17$	± 1.14		
SA4	Reaeration*	+ 50% - 50%	- .53 + 1.52			
SA5	Algae Growth	+ 50% - 50%	+ 1.56 - 1.17		+ 8.32 - 10.24	0 + 11.2
SA6	Periphyton Growth	+ 50% - 50%			Model would not run due to nonconvergence of algae	
		- .10		+ .72	0	+ 1.1
SA7	Algae Loss	+ 50% - 50%	$\pm .11$		- 1.05 + 1.14	0 $\pm .3$
SA8	PO4-P Uptake	+ 50% - 50%	- 3.07 + 1.09		- 10.18 + 2.94	0 + 29.1
SA9	P Half - Saturation Algae	+ 50% - 50%	- .33 + .46		- 1.75 + 2.33	0 $\pm .6$
SA10	P Half - Saturation Periphyton	+ 50% - 50%	- .05		+ .28	0 $\pm .3$
					Model would not run due to nonconvergence of algae	
SA11	P- Content Algae	+ 50% - 50%	- .18 + .15		- 1.64 + .52	0 ± 1.6
SA12	P-Content Periphyton	+ 50% - 50%	$\pm .17$		+ .56	0 $\pm .9$
SA13	Light Saturation Algae / Peri.	+ 50% - 50%	- .4 + .77		- 1.59 + 2.62	0 $\pm .6$
SA14	Oxygen Production Algae	+ 50% - 50%	± 1.42			
SA15	Oxy. Production Periphyton	+ 50% - 50%	$\pm .34$			

Goodwin		Ave DO	BOD	Chl-a	Periphyton	PO4-P
		ppm	ppm	ppb	mg chl-a / ft ²	ppb
Aug 28-30 Model Run		11.12	5.01	8.07	40.1	23.3
SA1	SOD	+ 50% - 50%	$\pm .19$			
SA2	BOD Decay	+ 50% - 50%	- .01 + .03	- .69 + .90		
SA3	Benthic CBOD	+ 50% - 50%	- .01 + .02	± 1.38		
SA4	Reaeration	+ 50% - 50%	- .69 + 1.79			
SA5	Algae Growth	+ 50% - 50%	+ .58 - .19		+ 11.6 - 6.74	- 4.9 + 2.4
SA6	Periphyton Growth	+ 50% - 50%			Model would not run due to nonconvergence of algae	
		- 1.27		+ .62	- 22.1	+ 1.5
SA7	Algae Loss	+ 50% - 50%	- .08 + .74		- 2.95 + 5.55	+ .8 - 1.7
SA8	PO4-P Uptake	+ 50% - 50%	- 2.33 + .42		- 7.13 + 2.85	- 40.1 + 5.7
SA9	P Half - Saturation Algae	+ 50% - 50%	- .05 + .03		- 1.38 + 1.94	+ .5 - .8
SA10	P Half - Saturation Periphyton	+ 50% - 50%	- .21		+ .22	- 4.0
					Model would not run due to nonconvergence of algae	+ .3
SA11	P- Content Algae	+ 50% - 50%	- .06 + .03		- .52 + .50	$\pm .4$
SA12	P-Content Periphyton	+ 50% - 50%			Model would not run due to nonconvergence of algae	
		+ .03		+ .48	+ .4	+ 1.3
SA13	Light Saturation Algae / Peri.	+ 50% - 50%	- .16 + .28		- 1.15 + 1.79	- 1.6 + 1.8
SA14	Oxygen Production Algae	+ 50% - 50%	$\pm .18$			
SA15	Oxy. Production Periphyton	+ 50% - 50%	± 1.76			

* The sensitivity analysis reaeration response to DO is the opposite of what normally occurs, due to supersaturation of DO.

Table 7a Sensitivity Analysis - Deviation from Base Case for <u>±</u> 50% Adjustment of Rates					
USA / Canada Border		Ave DO	BOD	Chl-a	Periphyton
		ppm	ppm	ppb	mg chl-a / ft ²
Aug 28-30 Model Run		11.15	4.45	11.52	0
SA1	SOD	+ 50% - 50%	- .47 + .54		
SA2	BOD Decay	+ 50% - 50%	- .14 + .25	- 1.02 + 1.47	
SA3	Benthic CBOD	+ 50% - 50%	± .22	± 1.46	
SA4	Reaeration	+ 50% - 50%	- 0.80 + 1.90		
SA5	Algae Growth	+ 50% - 50%	+ 2.6 - .23	+ 9.07 - 10.84	0 + 24.7
SA6	Periphyton Growth	+ 50% - 50%	- .59	+ .31	0 + 1.6
SA7	Algae Loss	+ 50% - 50%	- .55 + .50	- 3.52 + 4.92	0 + 1.5 - 1.7
SA8	PO4-P Uptake	+ 50% - 50%	- 4.17 + .63	- 11.46 + 1.58	0 - 12.5 + 62.4
SA9	P Half - Saturation Algae	+ 50% - 50%	- .23 + .25	- 1.88 + 1.38	0 + 1.0 - .7
SA10	P Half - Saturation Periphyton	+ 50% - 50%	- .05	+ 0.10	0 + .4
SA11	P- Content Algae	+ 50% - 50%	- .19 + .13	- .47 + .35	0 - 3.1 + 3.6
SA12	P-Content Periphyton	+ 50% - 50%	+ .10	+ .26	0 + 1.4
SA13	Light Saturation Algae / Peri.	+ 50% - 50%	- .7 + 1.16	- 2.17 + 3.55	0 + 1.5 - 1.7
SA14	Oxygen Production Algae	+ 50% - 50%	± 1.94		
SA15	Oxy. Production Periphyton	+ 50% - 50%	± .24		

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Table 7b Sensitivity Analysis -% Deviation from Base Case for 50% Adjustment of Rates					
Above Caribou Dam		Ave DO	BOD	Chl-a	Periphyton
		ppm	ppm	ppb	mg chl-a / ft ²
Aug 28-30 Model Run		10.53	4.28	10.54	0
SA1	SOD	2.8%			
SA2	BOD Decay	2.2%	20.2%		
SA3	Benthic CBOD	1.6%	26.6%		
SA4	Reaeration*	9.7%			
SA5	Algae Growth	13.0%		88.0%	
SA6	Periphyton Growth	1.0%		6.8%	
SA7	Algae Loss	1.0%		10.4%	
SA8	PO4-P Uptake	19.8%		62.2%	
SA9	P Half - Saturation Algae	3.8%		19.4%	
SA10	P Half - Saturation Periphyton	0.5%		2.7%	
SA11	P- Content Algae	1.6%		10.2%	
SA12	P-Content Periphyton	1.6%		5.3%	
SA13	Light Saturation Algae / Peri.	5.6%		20.0%	
SA14	Oxygen Production Algae	13.5%			
SA15	Oxy. Production Periphyton	3.2%			

Goodwin		Ave DO	BOD	Chl-a	Periphyton	PO4-P
		ppm	ppm	ppb	mg chl-a / ft ²	ppb
Aug 28-30 Model Run		11.12	5.01	8.07	40.1	23.3
SA1	SOD	1.7%				
SA2	BOD Decay	0.2%	16.0%			
SA3	Benthic CBOD	0.1%	27.5%			
SA4	Reaeration	11.1%				
SA5	Algae Growth	3.5%		113.6%	9.1%	14.2%
SA6	Periphyton Growth	11.4%		7.7%	55.1%	6.4%
SA7	Algae Loss	3.7%		52.7%	3.1%	27.9%
SA8	PO4-P Uptake	12.4%		61.8%	57.1%	130.3%
SA9	P Half - Saturation Algae	0.4%		20.6%	16.2%	3.0%
SA10	P Half - Saturation Periphyton	1.9%		2.7%	10.0%	1.3%
SA11	P- Content Algae	0.4%		6.3%	1.0%	6.0%
SA12	P-Content Periphyton	0.3%		6.0%	1.0%	5.6%
SA13	Light Saturation Algae / Peri.	2.0%*		18.2%	4.2%	3.2%
SA14	Oxygen Production Algae	1.6%				
SA15	Oxy. Production Periphyton	15.8%				

Table 7b Sensitivity Analysis - Deviation from Base Case for <u>±</u> 50% Adjustment of Rates						
USA / Canada Border		Ave DO	BOD	Chl-a	Periphyton	PO4-P
		ppm	ppm	ppb	mg chl-a / ft ²	ppb
Aug 28-30 Model Run		11.15	4.45	11.52	0	12.5
SA1	SOD	4.5%				
SA2	BOD Decay	1.8%	28.0%			
SA3	Benthic CBOD	2.0%	33.0%			
SA4	Reaeration	12.1%				
SA5	Algae Growth	12.7%		86.4%		54.8%
SA6	Periphyton Growth	5.3%		2.7%		12.8%
SA7	Algae Loss	4.7%		36.6%		12.8%
SA8	PO4-P Uptake	21.5%		56.6%		300.0%
SA9	P Half - Saturation Algae	2.2%		14.2%		6.8%
SA10	P Half - Saturation Periphyton	0.4%		0.9%		3.2%
SA11	P- Content Algae	1.4%		3.6%		26.8%
SA12	P-Content Periphyton	9.0%		2.3%		11.2%
SA13	Light Saturation Algae / Peri.	8.3%		24.8%		12.8%
SA14	Oxygen Production Algae	17.4%				
SA15	Oxy. Production Periphyton	2.2%				

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